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ABSTRACT

Program evaluators and program managers should examine appropriate dimensions of innovations when deciding to support, accept, or reject an educational innovation. Survey questionnaires were used with 76 teachers and administrators and 65 State supervisors and local project directors of exemplary programs to obtain a list of 38 "essential" characteristics of innovations. An additional 300 educational practitioners reponded to a 50-item questionnaire which included the 38 items and Likert-type response categories. These responses were factor-analyzed to identify six dimensions of innovation characteristics: student concern orientation, additional resource requirements, organized resistance potential, consumer report, credibility, and operational implementation. The significance of the study lies mainly in its use of the views of staff members involved in innovative projects as a resource for isolating and identifying the variables which influence the institutionalization of innovative projects. This reduction of staff views regarding the institutionalization of innovative programs and the substance of change provides a data base from which administrators can formulate strategies for improving the planning and accelerating the acceptance of innovative programs. (Author)

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A STUDY TO IDENTIFY VARIABLES PERCEIVED TO INFLUENCE THE INSTITUTIONALIZATION OF INNOVATIONS

A Paper Presented to the AERA Annual Meeting, Chicago, Illinois, April 15-19 1974

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The Problem

Objectives

The problem of this study was to identify the variables as perceived by staff members involved in selected innovative projects as being capable and of importance in influencing the institutionalization of innovative projects. More specifically, the problem was to identify both the substance and structure of staff perceptions concerning the initiation, implementation and articulation of innovative projects into the ongoing programs of school districts.

Research Method

A relatively unknown research technique, Latent Partition (LPA), was utilized in this study. This technique was developed in 1967 by a research team at the University of Wisconsin in cooperation with the U.S. Office of Education to answer questions dealing with qualitative data typical of problems in the social sciences. This categorization methodology consists of two major techniques: (1) the free sort (F-sort) for data categorization in which sorters may use as many or as few groupings as needed to sort and label data and (2) Latent Partition Analysis for data summarization, reduction and transformation.

Twenty-six individual tape-recorded interviews were made with staff members by the researcher to provide the data for this study. Interviews were made during the school day and within the building in which the project was located. Each interview lasted from 30 minutes to one hour. An interview guide had been developed to obtain the kinds of information being sought. Standardized content units were formulated by the researcher from the content of the tapes as closely as possible in the words of the interviewee. Each content unit represented the smallest meaningful representation of the interviewee's thinking. Content units were written in the following form: "The staff member states..."

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A random selection of 75 content units was made from the total set. These 75 randomly selected content units were duplicated onto IBM cards generated for this purpose. Each card was coded according to content unit number, deck number and random order within the deck. These individual decks of 75 content units provided the stimulus items for sorters to use during the Q-sort procedure.

The Q-sort procedure consisted of a prescribed set of sorting instructions carried out by the 63 sorters. Sorting was done either in groups after school in a central location available to the sorters selected from that project or by individual sorters through the mail. Sorting done by groups was done under the direction of the researcher. The sorting cue given was to group content units according to the likenesses perceived among them by the sorter regarding the central idea being expressed concerning the variables which influence the institutionalization of innovations. The 63 sets of manifest categories resulting from this sorting procedure provided the input for data summarization, reduction and transformation by Latent Partition Analysis.

Latent Partition Analysis used for data summarization and reduction consists of a mathematical model and a computational algorithm. The mathematical model is a conceptualization of the sorting probabilities assumed to occur during the performance of the Q-sort. The aggregated tabulation of the manifest categories into which the content units have been placed by sorters is summarized in a matrix of proportions. This matrix, known as the Phi Matrix, gives the relative frequencies of the sorters who combine each pair of items in their manifest sets. The computations utilized by the LPA algorithm are designed to identify the latent structure of the sortings as summarized. A further transformation of data reveals the various dimensions along which the latent categories are placed.

Data Source

The population for this study was selected from among professional staff members involved in Title III projects in the state of Illinois during the 1971-72 school year. Professional staff were considered to be teachers, project directors and assistant directors, coordinators, librarians, specialized instructors and ancillary personnel such as psychologists and social workers. This population was divided into interviewees and sorters.

Sixteen projects in the second or third year of funding were selected for this study. Projects were selected on the basis of being primarily concerned with curriculum and instruction or services for special groups of students.

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Projects which were concerned with district or county reorganization were not considered for the study.

The content domain of this study consisted of two dimensions. The first of these, the substance of the domain, resulted from the situations, events, interactions and other such conditions which occurred as the innovative project was carried out in the context of the school system. The second of these, the source of the domain, resulted from the involvement of staff in the project which provided the basis from which they drew as they expressed their views regarding the institutionalization of innovations and the subsequent categorizations of these views.

A Conceptual Rationale for this Study

The rapid change which is characteristic of our dynamic society creates problems for both the society and its institutions. The schools must successfully initiate and maintain new programs and practices to meet the changing needs of its clients and the society it serves.

Innovative programs are deliberate, planned attempts to introduce changes into the schools. However, unless these innovations are carefully planned and implemented, the change which is hoped for may not be lasting. An understanding of the variables which influence whether or not innovations will become a regular part of the system should help in planning for innovative programs so that their successful institutionalization is facilitated.

Some of these variables are of a qualitative nature and are best identified by those persons directly involved in such programs. This idea is supported by Miels as she states that a major untapped resource regarding the efficacy of programs is the views of people directly involved in the program under question.

Two concerns are evident as innovative programs are evaluated. One is the identification of practices leading to the successful institutionalization of programs. The other is the eliciting from staff members their perceptions of the variables involved. These two concerns led to the problem of this study and to the utilization of a research technique design to answer these questions.

Theory Base

The concern of this research was the substance and process of change but specifically with the identification of the variables which influence the institutionalization of

innovative programs; for it is partly through institutionalization of innovations that the systems change. It was determined that many of these variables would: (1) be of an idiographic nature, (2) would represent a complex set of variables extending over a period of time and (3) were best obtained from those directly involved in programs which were considered innovative.

Further, a research technique was needed which: (1) would provide for obtaining these views so that staff members could respond freely while expressing their views regarding the institutionalization of innovations, (2) would provide for statistically analyzing the resulting pool of views and (3) would present the data summarization in such a way that it could be analyzed and interpreted in light of existing concepts of organizations. The formulation of the theory base which underlies this research resulted from these three demands placed upon the research technique and those from the problem of the study.

Thus, the theory base of this research is concerned with both the substantive and procedural aspects of the study. Two questions were asked in focusing on the substance of this research. These were: (1) What is the nature of the content domain? and (2) What is the value and potential of utilization of staff views regarding the institutionalization of innovations? The procedural concerns dealt with answering the question, What is the nature of staff views in relationship to an appropriate method of gathering and structuring data?

Nature of the Content Domain.--The nature of the content domain of this research can be described as resulting from the clinical orientation of staff members as they participate in the organization and specifically in the project. This clinical orientation can be considered as the freshness of the viable observation of the situation. It is the capacity to see what is out there and knowing the things that count which gives relevance to this knowledge. This orientation is typical of the clinician who adopts this attitude as he attempts to do things for other human beings and assumes moral responsibility for what is being done. The relationship of the content domain of this study to changes occurring in the public schools is shown in Figure 1.

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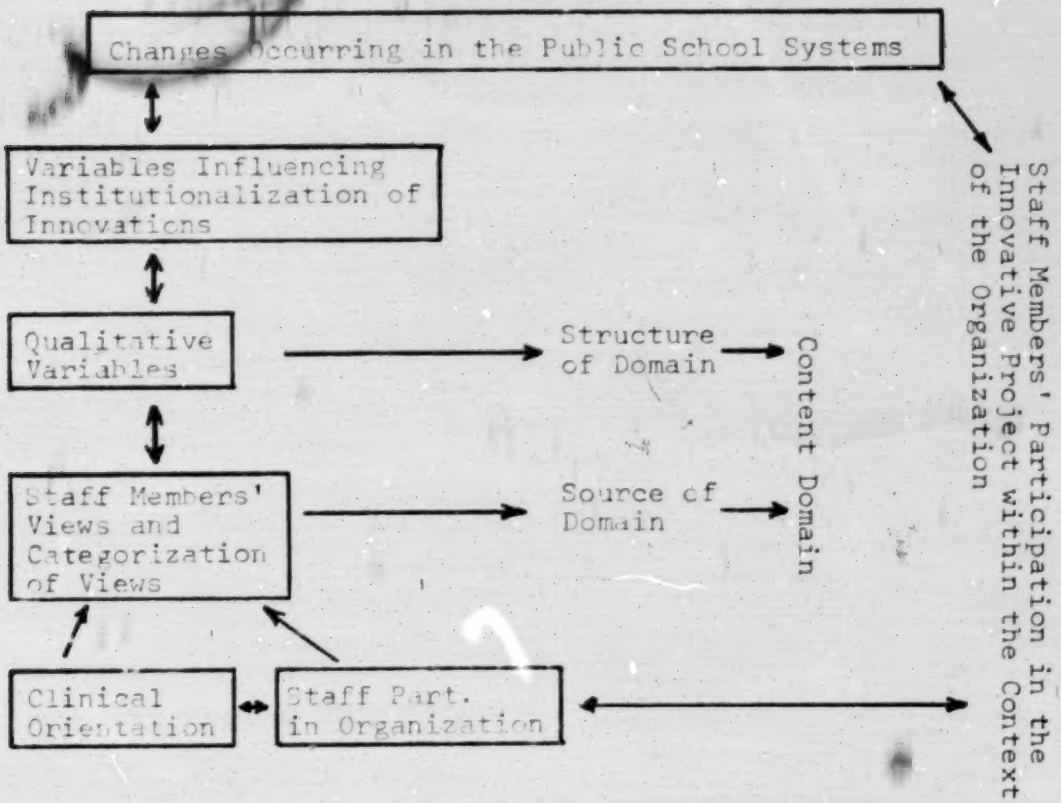
FIGURE 1

RELATIONSHIP OF THE CONTENT DOMAIN TO STAFF MEMBERS' PARTICIPATION IN THE ORGANIZATION


Changes Occurring in the Public School Systems
Variables Influencing Institutionalization of Innovations
Qualitative Variables
Structure of Domain
Content Domain
Staff Members' Views and Categorization of Views
Source of Domain
Clinical Orientation
Staff Part. in Organization
Staff Members' Participation in the Innovative Project within the Context of the Organization

In addition to the clinical orientation of staff members as they participate in the organization, the staff member can also be described as "man the scientist" who constructs the reality of his existence in his efforts to predict and control the future. It is this system of constructs which are formulated that assist him in this prediction and control.

Construct formation provides the grounds for understanding both the commonality of staff views and the differences among them. Staff members find commonality in events in which they are involved by sharing of experiences, interpreting the experiences of others along with their own and in interpreting these in terms of the likenesses and differences they see. On the other hand, there are differences

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in interpretations because no two staff members approach an event in exactly the same way nor can they play exactly the same role regardless of how closely they are associated.

Value and Utilization of Views--The views expressed by staff members regarding innovative programs may or may not have validity. Some of these may be quite significant while others may not be of much importance. However, all of these views merit consideration in that even false impressions and irresponsible objections must be considered and answered if broad support is to be generated for new practices. Furthermore, these viewpoints, whether real or perceived as being real but without a basis in objective reality, serve to stimulate further study and thoughtful consideration.

Another reason for explicating and classifying views regarding the institutionalization of innovative programs by those directly involved is that the behavior of staff members is determined by their own perceptual processes. Modification of this behavior depends upon understanding how staff members think.

Selection of a Research Technique--The interview provides an appropriate method for gathering the substantive content of a study for it can cover not only observable, objective facts regarding conditions or events but also allows for gathering of subjective data such as opinions, interpretations, attitudes and emotional feelings which may not be easily obtained by other methods. It allows for range, specificity, depth and placing the problem of the research within the personal context of the interviewees. It permits the interviewee to draw freely on his own perspectives and participation in the innovative project.

The interview is not an isolated event but is one part of a sequence which is related to the general purpose and nature of the research. In this study, the interviews resulted in a pool of standardized content units from which randomly selected content units were categorized by staff members. This categorization process is shown in Figure 2.

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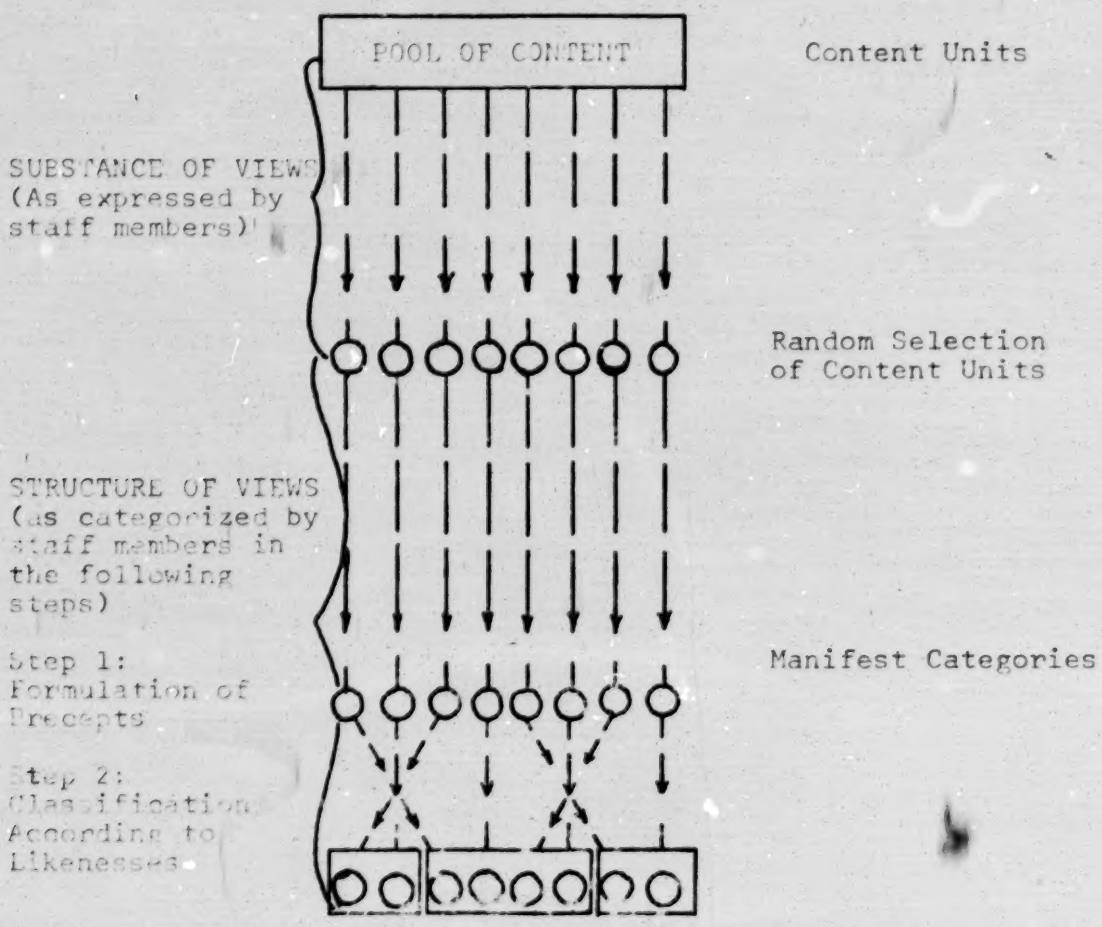
FIGURE 2

THE CATEGORIZATION PROCESS BY AN INDIVIDUAL STAFF MEMBER[a]


POOL OF CONTENT
Content Units
SUBSTANCE OF VIEWS (As expressed by staff members)
Random Selection of Content Units
STRUCTURE OF VIEWS (as categorized by staff members in the following steps)
Step 1: Formulation of Precepts
Manifest Categories
Step 2: Classification According to Likenesses

[a] Modified from Donald M. Miller, et. al., Elementary School Teachers' Viewpoints of Classroom Teaching and Learning. A Research Report to the U. S. Office of Education, University of Wisconsin, 1967, p. 16.

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Latent Partition Analysis is a research technique which meets the criteria described earlier in this theory base. The findings resulting from LPA are described in the following section.

Findings of this Study

The Composition of the Latent Structure

The latent structure underlying the substantive data of this study consisted of 18 latent categories and their corresponding content units as revealed by LPA. The range of content units which comprised individual latent categories was from one to nine. The probabilities of membership with a category ranged downward from 157 to 28. All content units were assigned positive or tentative membership within a category. Titles of the 18 latent categories are found in Table 1.

Table 1

THE EIGHTEEN LATENT CATEGORIES

Category Number	Category Title
1	Student Involvement
2	Regular Staff
3	Funding
4	Negative Staff Involvement
5	Importance of Parents
6	Administrative Support
7	Helpful Components
8	Attitude toward Change
9	Relevance of Training
10	Staff Satisfactions
11	Interrelatedness
12	Staff Cooperation
13	Planning
14	Support and Reception
15	Scheduling
16	Staff Impact
17	Responsibility and Awareness
18	Problem Solving

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The composition of the individual latent categories was described by: (1) identifying the concern of the category from the content unit holding the highest probability of membership in the category, (2) clarifying the meaning of the category through summarization of the remaining content units, (3) reporting the key words and phrases of the category and (4) investigating the relationship of individual content units within the category and the category as a whole to other latent categories. (A more complete description of the categories will be available at a future date.)

Cohesion of Latent Categories--Three latent categories comprised of more than one content unit each showed cohesion indices of 63 to 67. This indicates that pairs of content units from these individual categories were grouped together by approximately 2/3 of the sorters in their manifest categories. These high probabilities of cohesion indicate relative agreement among sorters concerning the impact of these three variables upon the institutionalization of innovative projects.

The three latent categories showing these indices of cohesion were: Regular Staff (p=63), Administrative Support (p=65) and Funding (p=67). Two of these categories are concerned with personnel outside the project. The support, awareness and education of these personnel regarding the project and its goals in conjunction with the obvious need for funding makes a powerful constellation of variables.

Reorganization of the 18 Latent Categories--The 18 latent categories were reorganized by the researcher into three broad areas of concern to innovative projects. These areas were: (1) project operation, (2) impact, attitudes and values and (3) project outcomes. This re-grouping provides a framework into which those concerned with innovative projects can fit the structure and substance of staff thinking regarding the variables which influence the institutionalization of innovative projects.

The Major Dimensions: The Functioning Subsystems of the Organization--In addition to the explication of the latent structure underlying staff thinking regarding the institutionalization of innovations and the relationships shown between individual latent categories, the structural relationships between categories was also investigated. The measure of relative distance for individual latent categories along a dimension as determined by multi-dimensional scaling and displayed by LEA are shown in Table 2.

In general the individual dimensions were described as follows: (1) the dimension was labeled according to the functioning subsystem which seemed most prominent to the

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Table 2

MULTI-DIMENSIONAL SCALES OF THE
CONFUSION PROBABILITIES FOUR MAJOR DIMENSIONS

#	Latent Categories Title	Dimensions I	II	III	IV
1	Student Involvement	44	49	-15	-5
2	Regular Staff	-49	26	39	-5
3	Funding	-15	-27	-86	4
4	Negative Staff Involvement	-12	-45	-4	-27
5	Importance of Parents	-27	4	20	62
6	Administrative Support	-48	27	-12	-5
7	Helpful Components	-6	-17	-32	-20
8	Attitude toward Change	30	-17	21	11
9	Relevance of Training	39	2	11	-3
10	Staff Satisfactions	28	27	4	-11
11	Interrelatedness	17	18	11	-30
12	Staff Cooperation	-5	-20	33	-24
13	Planning	38	42	-3	12
14	Support/Reception	-64	35	-22	23
15	Scheduling Students	46	23	-5	-5
16	Staff Impact	-49	-38	22	-36
17	Responsibility/Awareness	-23	-20	16	34
18	Problem Solving	4	7	-1	-7

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dimension, (2) the impact of the dimension in relation to innovative projects was examined, (3) the focus of the dimension was described according to the concerns of the categories and their placement in relationship to each other along the dimension and (4) a generalization was made in regard to the distinction which seemed apparent between the concerns of the categories at the extremes of the dimension.

The value of interpreting a dimension according to the four functioning subsystems lies in translating the static titles of the latent categories and the specific substance of the individual content units comprising the categories into processes and means utilized by the system in carrying out the project and attempting to meet project goals. A brief description of the focus of each of the four dimensions investigated in this study is given here.

Dimension #1: Goal Attainment--Goal attainment can be seen as being of central importance to any innovative project if the project is to be successful and eventually institutionalized. Problem solving was the focus of this dimension in relationship to: (1) obtaining the cooperation, support, responsibility and awareness of project goals in terms of the components needed to meet these goals and (2) planning and carrying out the project so that the goals and objectives are realized in terms of the students.

Dimension #2: Integrative Function--The integrative function is closely related to goal attainment in that the system must function effectively in relationship to the project goals if the project is to be supported. The main focus of this dimension was on instruction of students. Emphasis was on effecting a positive attitude toward change and a positive involvement of people related to the project in regard to the resources needed and planning necessary for carrying out project objectives.

Dimension #3: Adaptation--The system must adapt to change if the project is to become integrated into it and the problems which are encountered resulting from innovation are to be solved. The two categories central to this dimension, Planning and Problem Solving, can be thought of as the primary means by which this adaptive function is accomplished. Planning in conjunction with problem solving would tend to put both the project and the system beyond the survival level of existence.

Dimension #4: Maintenance--The project must be maintained if it is to be continued past the pilot stage. The focus of this dimension was on identification of the variables deemed most salient to the project. These two variables as represented by the two central categories were: Funding and Relevance of Training.

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Significance of this Study

The significance of this study lies mainly in utilizing views of staff members involved in innovative projects as a resource for isolating and identifying the variables which influence the institutionalization of innovative projects. Staff members' perceptions have frequently been overlooked in favor of data of a more qualitative nature.

This reduction of staff views regarding the institutionalization of innovative programs and the substance of change provides a data base from which administrators can formulate strategies for improving the planning and acceptance of innovative programs. In addition, the translation of the substance and processes of change into identifiable categories and dimensions represents an effort to contribute to the "language of change".

This study represents one of the first research efforts to identify the variables which influence the institutionalization of innovations. A relatively little used research method has been employed to answer a question which would be difficult to attempt by employing more traditional statistical methods.

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